

XII. EARL DOUGLASS.

A SKETCH IN APPRECIATION OF HIS LIFE AND WORK

BY W. J. HOLLAND.

The news of the death in Salt Lake City on Tuesday, January 13, 1931, of Earl Douglass, came some days later as a distinct shock to his many friends at the Carnegie Museum.

Earl Douglass was born at Medford, Minnesota, on October 28, 1862. His parents were the late Fernando and Abigail Louisa (Carpenter) Douglass. His father, who survived his mother, is buried on the banks of the Green River, Utah, near the spot where Earl Douglass had built for himself a house on land, which he acquired while making collections for the Carnegie Museum at the "National Dinosaur Monument."

After pursuing elementary studies in the common schools of his native village he matriculated in 1888 at the University of South Dakota, and later entered the South Dakota Agricultural College, where he took his degree as Bachelor in Science in 1892. He studied further at Iowa State College during the year 1893. For some years he taught school in Montana, part of the time at Virginia City. During the years 1899-1900 he studied in the University of Montana, serving part of the time as instructor in physics, physical geography, and geology. From the summer of 1900 to the autumn of 1901 he was an assistant to Dr. William Trelease at the Missouri Botanical Gardens in St. Louis. He then was granted a fellowship in geology at Princeton University, where under the direction of Prof. William B. Scott he studied tertiary vertebrates. In 1902 he became a member of the staff of the Carnegie Museum in the Section of Paleontology. This relationship lasted for twenty-two years until shortly after the accession of the late Mr. Douglas Stewart to the Directorship, when Earl Douglass sundered his connection with the Carnegie Museum to become a consulting geologist for certain companies engaged in developing the oil-fields of Utah. He also devoted some time to work at the State Museum in Salt Lake City.

On October 20, 1905, Mr. Douglass married Miss Pearl C. Goetschius of Alder, Montana. One son, Gawin Earl Douglass, was born to them

in the early years of their married life. He makes his home in East Salt Lake City with his widowed mother at 130 South 18th Street, and is at present engaged as draftsman and assistant engineer for a local railway company.

At the time Mr. Douglass became a member of the staff of the Carnegie Museum he brought with him to Pittsburgh quite an extensive collection of fossils, which he had collected during previous years in various parts of Montana and the Dakotas. This was purchased from him by the Museum. In the summer of 1902 he was sent to Montana to continue collecting. He was very successful. On his return to the Museum in the fall of the year he began under the direction of the late J. B. Hatcher, and subsequently under the direction of the writer of these lines, the study of the fossil remains from Montana, which had been assembled by him, and to which additions in subsequent years were made. The results of his investigations are embodied in a series of papers published in the *Annals and Memoirs of the Carnegie Museum* from the year 1903 to the year 1910, after which period, although carrying on most remarkable work in the field for the Museum, he ceased to produce descriptive papers, finally bending all his energies to the exploitation of the great quarry in northeastern Utah, which came later to be known as "The National Dinosaur Monument."

In 1905 the writer sent Mr. Percy E. Raymond and Mr. Douglass to collect vertebrate and invertebrate fossils in Minnesota, North Dakota, Montana, and Idaho, and to obtain, if possible, data for the settlement of certain geological problems, which had arisen in the study of that region. One or the other of these two gentlemen explored the Ordovician rocks near St. Paul and westward; the Badlands of the Little Missouri River in North Dakota and on the Yellowstone River in eastern Montana; various Paleozoic and Mesozoic formations in western Montana, and certain Tertiary beds extending from Montana into Idaho. The summer and fall of 1905 were occupied in this survey. The result was the ascertainment of the relative position of various strata and the acquisition of quite a considerable body of material, some of which was new to science.

During the year 1906 Mr. Douglass was mainly occupied in work in the laboratory at the Carnegie Museum and in writing upon material acquired by him, as already stated.

In 1907 the Director of the Carnegie Museum decided to send Mr.

Douglass to northeastern Utah to make a thorough exploration of the fossiliferous strata of the Uinta Basin. But little was as yet known about the geology and paleontology of this area, though many years before the late Professor O. C. Marsh had made some collections in the Uinta Basin on the occasion of a hurried visit, and as early as 1893 Mr. O. A. Peterson had, while collecting for the American Museum of Natural History, touched the western borders of the Basin and had collected valuable material.

The region in 1907 was included in the Uinta and Uncompahgre Indian Reservations. Accordingly I repaired to Washington and had a pleasant interview with Mr. J. Rudolph Garfield, at that time the Secretary of the Interior, who expressed approval and interest in the proposed undertaking. He referred me to Mr. Leupp, the Indian Commissioner, who provided me with the necessary papers authorizing me, or my representatives, to enter these Indian reservations for the purpose of collecting fossils. The only condition suggested was that neither I nor my representatives were to provide the Indians on the reservations with whiskey. This proviso was not in the least degree embarrassing.

Mr. Douglass on his way to Utah made hurried investigations near Grand Junction, Colorado, and at Dragon, Utah, which were interesting. He, however, did not delay, but went forward, and finally located himself at an abandoned stone house at "Well No. 2" on the stage route from Dragon to Vernal, Utah. This house had been erected by a company engaged in mining gilsonite in that region, but had been abandoned by them. The officers of the company accorded the use of the house to Mr. Douglass without charge. Making this spot his headquarters, he explored the fossil-bearing exposures in this desolate land from the crossing of the White River in the east to the banks of the Green River in the west, and north and south of the trail to Vernal. He collected a large number of fossils, mostly vertebrates, among them numerous species new to science. One tract known as "The Devil's Play-ground," where extensive erosion had gone on was particularly rich at that time in fossil remains. Here he discovered a number of fossil turtles, which later were named and described by the late O. P. Hay. One of the most remarkable of his discoveries was that of a complete skeleton of *Dolichorhinus longiceps*, which has for a long time been one of the striking displays in the gallery of fossil mammals in the Carnegie Museum, and is the most

perfect specimen representing this genus in existence. It was found not far from the White River in a high bluff. It is an early eocene forerunner of the Titanotheres.

In the spring of 1908, Mr. Douglass returned to the Uinta Basin and with great success continued his work. In September of that year the writer visited him and carefully went over the field. One evening my admiration was excited by a brilliant sunset in which the lofty peaks of the Uinta Range to the northwest loomed up grandly. I remarked to him that a study of Hayden's Survey disclosed the fact that in those mountains there were extensive exposures of Jurassic strata, and I said to him that we ought to find the remains of dinosaurs in that region. We decided that we would set forth early the next day with our team of mules and visit the foot-hills, where Hayden had indicated the presence of Jurassic exposures. We started shortly after dawn and spent a long day on the cactus-covered ridge of Dead Man's Bench, and in making our way through the gullies and ravines to the north. At nightfall we found ourselves after descending a wild declivity by the edge of a small brooklet, where we slept under our blankets, while the mules grazed upon the scanty pasturage which was found at that spot. The next day we went forward through the broken foot-hills which lie east and south of the great gorge through which the Green River emerges from the Uinta Mountains on its course toward the Grand Canyon of Arizona. As we slowly made our way through stunted groves of pine we realized that we were upon Jurassic beds. We tethered our mules in the forest. Douglass went to the right and I to the left, scrambling up and down through the gullies in search of Jurassic fossils, with the understanding, that, if he found anything he was to discharge the shot gun which he carried, and, if I found anything, I would fire the rifle, which I carried. His shotgun was presently heard and after a somewhat toilsome walk in the direction of the sound I heard him shout. I came up to him standing beside the weathered-out femur of a *Diplodocus*, lying at the bottom of a very narrow ravine into which it was difficult to descend. Whence this perfectly preserved bone had fallen, from what stratum of the many above us it had been washed, we failed to ascertain. But there it was, as clean and perfect as if it had been worked out from the matrix in a laboratory. It was too heavy for us to shoulder and carry away, and possibly even too heavy for the light-wheeled vehicle, in which we were traveling. So we left it there, proof

positive that in that general region search for dinosaurian remains would probably be successful. This specimen, if my memory serves me correctly, was later taken to a Lutheran college somewhere in the middle west, some of the graduates of which we found dredging for gold in the Green River below the gorge, and to whom at their camp-fire we spoke of our discovery.

I shall not take time to here relate the adventures of the following days in which we carefully investigated the Jurassic beds upon which we found ourselves, except to state that after crossing the Green River, we found that these beds continued as an extensive uplift on the right bank of that great stream, below the deep gorge of the Green River, into which we peeped from below, and into which we peered after climbing half a mile into the air along its western flank. At points this chasm, which is very narrow, is more than a mile deep.

In the spring of the year 1909 the writer instructed Mr. Douglass to repair to the region which we had visited the previous September and to minutely and carefully explore the exposures of Jurassic rock on the right bank of the Green River above Vernal, for the purpose of ascertaining whether he could find some locality rich in dinosaurian remains. He carried out his instructions. Letter after letter was received from him stating that, aside from fragments, occurring here and there, he had found no prospect apparently worth more than passing examination. However, I was finally delighted to receive from him a letter in which he told me that at the very summit of a rough jagged peak he had discovered the remains of a huge dinosaur, the caudal vertebræ of which were apparently all in place and as far as he had uncovered them the indication was that an entire skeleton was there buried in the rock. I was not long in going out to the spot to investigate and encourage my associate. I was more than pleased with what I found had already been accomplished and realized that future work was full of promise. The skeleton Douglass had found on the mountaintop was that of the huge animal which subsequently I named *Apatosaurus louisæ* in honor of Mrs. Andrew Carnegie, and which has long stood mounted in the Gallery of Fossil Reptiles in the Carnegie Museum, alongside of the skeleton of *Diplodocus carnegiei*. Mr. Carnegie, when I reported to him the results of our work in Utah, expressed himself as greatly delighted, and as the work was destined to be expensive added \$5,000 to his annual contribution of \$10,000,

which he had previously entrusted to me for use in carrying on paleontological researches.

The mountain, on which was the quarry, which had been opened by Mr. Douglass, I ventured to call "Dinosaur Peak." The opening was long known as the "Carnegie Quarry."

Anticipating for the moment, I may here say that our work went on for some years without interruption and with great success; and then the Uncompahgre Indian Reservation was thrown open to settlement. We realized that at any moment, desolate though the land was, some wandering speculator might file a claim to the land upon which we were working. Accordingly Mr. Douglass, acting for the Carnegie Museum, was instructed to file a mining claim to the land on which the quarry was located. A learned official in the office at Washington, D. C., decided that fossil bones cannot be regarded as "minerals," and the claim was rejected. In this extremity I repaired to Washington and talked the matter over with my good friend, Dr. Charles D. Walcott of the Smithsonian Institution. He pointed out to me that the land might be exempted from occupation by others under the provisions of a law, which had shortly before been enacted, under the provisions of which the President of the United States has authority to withdraw from settlement lands, upon which are located archeological and scientific remains which it may be important to preserve. With Dr. Walcott's able assistance we secured the designation of the eighty acres, upon which we had filed our claim, as "The National Dinosaur Monument," President Wilson smilingly acceding to the request, which Dr. Walcott and I laid before him in prescribed form. So the quarry opened by Mr. Douglass on Dinosaur Peak came to be, and remains to this day "The National Dinosaur Monument," under the general care and oversight of those officers of the government, who are in charge of the National Parks and Forests.

The fossiliferous strata at the point where Mr. Douglass was working lie inclined to the horizon at an angle of approximately sixty degrees. The deposit is apparently a sand-bar of an ancient river, once laid down at sea-level, now tilted up at a sharp angle and raised over seven thousand feet above the sea. This is proved by the presence just below it of marine beds full of sea-shells. The fossil-bearing bed has considerable thickness, and is overlaid by very heavy beds of sandstones and shales. In operating it was necessary to remove the overlying shales and rock and thus expose the bone-bearing strata.

This involved much labor and consequent expense. Men from the neighborhood were employed. A track of rails, such as are used in coal-mines, was laid down and a dumping-car was placed upon them. We tore away the rock covering the remains imbedded in the lower layer of sandstone. We went down from month to month and year to year, and finally, at the time when we ceased operations, we had made an excavation nearly six hundred feet long and eighty feet deep from the point where we had begun the process of uncovering. It probably was the largest undertaking of its kind in the history of paleontology.

From year to year we were rewarded by great and sometimes most unexpected discoveries. Dinosaurs representing many families, genera, and species were recovered. Several of the skeletons are almost perfect. One of these mounted in the Carnegie Museum on a slab is probably the most perfect skeleton of a small dinosaur ever discovered. Of course a great deal consisted of fragments. From year to year the boxes containing the specimens taken out were shipped to Pittsburgh. Each box contained material, the location of which was exactly fixed upon a map of the quarry, which from month to month and year to year grew ever larger. Minutely accurate records were kept. Some of these skeletons still remain in the basement of the Carnegie Institute not freed from the matrix or prepared for study; others have been carefully worked out, some of them described, and others still await description. This work, which was carried on continuously from the year 1909 until the spring of 1923 resulted in the shipment to the Carnegie Museum of many carloads of stone containing fossil bones in the aggregate weighing over three hundred tons. Much still remains to be cleared from the matrix, described, figured, and reported upon in our publications. Mr. Carnegie's death and the cessation of his annual contributions to this phase of the work of the Carnegie Museum has reduced and held back the progress of the work, which was enthusiastically carried on during his lifetime.

To all of this great undertaking Mr. Earl Douglass devoted himself continuously with the greatest enthusiasm and energy. In 1910 he purchased a considerable tract of land on the banks of the Green River below the peak on which the quarry was located and there erected for himself a house. His wife and son, later his father, joined him there and he made his home at the spot, the work in the quarry going on continuously. He labored the year long, even in

the cold of winter, when it was possible to work in the quarry. Occasionally he made excursions at the request of the Director of the Museum to other fossiliferous localities not far away; but for the greater part of twelve years his time was spent uninterruptedly in extracting from the great opening, which was gradually made, the treasures which it contained, mapping the work from day to day, numbering the specimens, bone by bone, and keeping an accurate account of every fragment which was found. Probably no quarry ever opened by collectors has as minutely exact and carefully prepared a record of the relative position of every bone or block of stone which was taken therefrom.

At the invitation of people near by he occasionally lectured, illustrating his lectures by lantern-slides. He found interested audiences at Jensen, Vernal, and other towns, which were accessible to him by the modes of conveyance which he had at his command. He wrote constantly for the newspapers in Utah upon geological themes. It is a matter of regret that the writer of these lines has no file of these papers, which were published in various journals.

The quarry, as its existence became known, was frequently visited not only by scientists, but by the curious living near by, and even coming from great distances. The task of receiving and explaining to visitors what was being done took up some of his time, but he was always kind and gracious. His agricultural and pastoral adventure unfortunately did not flourish well, although he built a reservoir upon the land which he had acquired, hoping through it to be able to irrigate at least a portion of the tract which he had acquired. He depended for the filling of his reservoir upon the melting snows which in the springtime sent a brooklet full of water from the nearby eminences. Unfortunately although his reservoir was generally filled in the spring it only furnished moisture enough to make productive a few acres immediately adjacent to his bungalow. Here he was able to grow vegetables. He had live stock which furnished him with milk and to a certain extent with meat. Poultry thrived well.

He consistently refused the urgent entreaties of the writer of these lines to return to the Museum in the winter months, preferring as he expressed it, the life of the wilderness, with which he had become entranced.

He kept faithfully in touch with the administration of the Carnegie Museum, and the writer has before him a number of volumes of his

letters giving an account of his work and embodying a great deal of information which is interesting. It is hoped that the time may come when it will be possible to publish at least some portions of this large file of correspondence, which relates not only to his work in the quarry, but to his observations upon the geology of the region around about.

As already stated, Mr. Douglass ceased, after he began his work in Utah, to write systematically upon paleontological themes. His principal contributions to the literature of paleontology and geology are here listed.

1. The Neocene Lake Beds of Western Montana and Descriptions of Some New Vertebrates from the Loup Fork, a Thesis for the degree of M.S. in the University of Montana, presented June, 1899, published by the University July, 1900, pp. 1-27; Pls. I-IV.

In this paper he described and figured the following new species: *Gomphotherium serus*; *Protolabis montanus*; *Procamelus madisonius* and *lacustris*; *Palæomeryx americanus* and *madisonius*; *Cosoryx agilis*; *Anchitherium minimus*.

2. New Species of *Merycochærus* in Montana, Pt. I, American Journal of Science, (4), Vol. X, 1900, pp. 428-438; 3 figures in text.

In this paper he described *Merycochærus laticeps*, subsequently by him made the type of his genus *Pronomotherium*.

3. Part II of the foregoing paper, American Journal of Science, (4) Vol. XI, Jan. 1901, pp. 73-83.

In this paper he described the following new species: *Merycochærus altiramus* (Subsequently referred by him to the genus *Pronomotherium*); *M. madisonius*; *M. elrodi*; *M. compressidens*; and contributed to our knowledge of an allied species, which he called *Merycochærus* (?) *obliquidens* Cope. Whether the last species is identical with that named by Cope is open to question.

4. Fossil Mammalia of the White River Beds of Montana. Transactions American Philosophical Society, (2), XX, 1901, pp. 237-239; 1 map; Pl. LX.

In this paper he describes as new to science the following genera: *Cylindrodon*, *Bathygenys*, *Limnenetes*, and *Arretotherium*; and the species: *Ictops acutidens*; *Steneofiber hesperis*, and *complexus*; *Palæologus temnodon*; *Cylindrodon fontis*; *Sciurus jeffersoni*; *Eumys minor*;

Hyænodon montanus, and *minutus*; *Colodon cingulatus*; *Bathygenys alpha*; *Limnenetes platyceps*, and *anceps*; *Oreodon robustum*; *Eucrotaphus helenæ*; *Agriochærus maximus*, and *minimus*; *Arretotherium acutidens*.

5. Dinosaurs in the Ft. Pierre Shales and Underlying Beds in Montana. *Science* (n.s.) XV, 1902, pp. 31-32.
6. The Discovery of Torrejon Mammals in Montana. *Science* (n.s.) XV, 1902, pp. 272-273.
7. A Cretaceous and Lower Tertiary Section in South Central Montana. *Proc. Amer. Philos. Soc.*, XLI, 1902, pp. 207-234, Pl. XXIX.

This paper was an amplification of what he had previously published in "Science" in relation to the discovery of early mammalian remains which before that time had only been known from Torrejon in New Mexico. The plate accompanying the article shows fragments referable to the genera *Pantolambda*, *Anisonchus*, *Euprotogonia*, and *Myocænus*, but no new species are described.

8. *Astropecten* (?) *montanus*—A New Star-fish from the Fort Benton; and some Geological Notes. *Annals Carn. Mus.*, Vol. II, Pt. I, 1903, pp. 5-8.
9. New Vertebrates from the Montana Tertiary. *Annals Carn. Mus.*, Vol. II, Pt. 2, 1903, pp. 145-200; 37 figs. in text; Pl. II.

In this paper he described and illustrated the following:

REPTILIA: *Helodermodoides* gen. nov.; *tuberculatus* sp. nov.; *Ogmophus arenarum* sp. nov.

MAMMALIA: *Insectivora*: *Talpa* ? *platybrachys* sp. nov.

Carnivora: *Mesocyon* (?) *drummondanus* sp. nov.; *Ælurodon* (?) *brachygnathys* sp. nov.; *Mustela* (?) *minor* sp. nov.; *Dynocyon ossifragus* sp. nov.

Perissodactyla: *Heptodon* (?) sp.; *Hyrachyus* (?) *priscus* sp. nov.; *Mesohippus latidens* sp. nov.; *Aphelops* (?) *ceratorhinus* sp. nov.

Artiodactyla: *Trigenicus* gen. nov., *socialis* sp. nov.; *Oreodon macrorhinus* sp. nov., *Promerycochærus minor* sp. nov.; *Hesperhys* gen. nov.; *vagrans* sp. nov.; *Poatrephes* gen. nov., *paludicus* sp. nov.; *Merychys smithi* sp. nov.

Rodentia: *Sciurus arctymyoides* sp. nov.; *Palaarctomys* gen. nov., *montanus*, *macrorhinus* spp. nov.; *Mylagaulus pristinus*, *proximus* spp. nov.

10. Some Notes on the Geology of Southwestern Montana. *Annals Carn. Mus.*, Vol. III, Pt. 2, 1905, pp. 407-428, Pl. XV.

A stratigraphical paper largely based upon original observations made by the author.

11. Tertiary of Montana. *Memoirs Carn. Mus.*, Vol. II, 1905, pp. 203-225, Pl. XXII.

This paper describes and gives figures of the following: *Xenotherium* gen. nov., *unicum* sp. nov.; *Ictops montanus*, *intermedius*, *tenuis*, *major* spp. nov.

12. Generic Names of Merycoidodonts. *Science* (n.s.), XXIV, 1906, pp. 565-567.

The article deals wholly with questions of taxonomy and nomenclature.

13. Merycochærus and a New Genus of Merycoidodonts, with Some Notes on other Agriochæridæ. *Annals Carn. Mus.*, Vol. IV, 1907, pp. 84-98, Pl. XXII.

In this paper the author erects the genus *Pronomotherium* specifying as its type the species originally described by him as *Merycochærus laticeps*.

14. Some New Merycoidodonts. *Annals Carn. Mus.*, Vol. IV, 1907, pp. 99-109, Pls. XXIII-XXX.

The author describes and figures the following: *Eucrotaphus dickinsonensis*, *montanus*, spp. nov.; *Merycooides* gen. nov., *cursor* sp. nov.; *Mesoreodon* (?) *latidens* sp. nov.; *Promerycochærus hatcheri*, *grandis*, *houandi*, spp. nov.; *Ticholeptus breviceps*, *bannackensis*, spp. nov.

15. New Merycoidodonts from the Miocene of Montana. *Bull. Amer. Mus. Nat. Hist.*, XXIII, 1907, pp. 809-822, with 9 text-figures.

In this paper he describes and figures *Mesoreodon longiceps* sp. nov., *Ticholeptus brachymelis*, sp. nov. and in the light of the new material before him places *Merycochærus altiramus* Douglas in the genus *Pronomotherium*, to which it plainly belongs.

16. Rhinoceroses from the Oligocene and Miocene Deposits of North Dakota and Montana. *Annals Carn. Mus.*, IV, 1908, pp. 256-266; 7 figs. in text, Pls. LXIII-LXIV.

Aphelops montanus sp. nov. is described and fuller information in the light of new material is supplied as to *Aphelops ceratorhinus* Douglass and *Aceratherium tridactylum* Osborn.

17. Fossil Horses from North Dakota and Montana. *Annals Carn. Mus.*, 1908, pp. 267-277, Pls. LXV-LXVIII.

In this paper he erects the new genus *Altippus*, and names the following: *Mesohippus portentus* sp. nov., *Altippus taxus* sp. nov.; *Merychippus* (?) *missouriensis* sp. nov. He also describes much material representing species previously named and partially described by other authors.

18. Some Oligocene Lizards. *Annals Carn. Mus.*, IV, 1908, pp. 278-285; 8 figs. in text.

The skull of *Glyptosaurus* (?) *montanus* sp. nov. is described and figured. Descriptions and some figures are given of material representing species previously named and partially described by Marsh, Baur, and Cope.

19. Vertebrate Fossils from the Fort Union Beds. *Annals Carn. Mus.*, V, 1908, pp. 11-26; Pls. I-II.

This paper deals with the fauna of the very early Tertiary discovered by Douglass in Montana. The following are the new things named and described: *Ptilodus montanus* sp. nov.; *Picrodus* gen. nov. *silberlingi* sp. nov.; *Coriphagus* gen. nov. *montanus* sp. nov.; *Megopterus* gen. nov. *minuta* sp. nov.

20. A Hunt for Extinct Animals. *Guide to Nature*, Vol. I, 1908, pp. 1-8, 8 half-tone cuts of photographs taken in western Montana.

The article, the first in the new magazine undertaken by Edward P. Bigelow, gives a popular account of one of his last collecting trips into western Montana.

21. Description of a New Species of *Procamelus* from the Upper Miocene of Montana, with Notes upon *Procamelus madisonius* Douglass. *Annals Carn. Mus.*, V, 1909, pp. 159-165, 2 figs. in text, Pls. IX-XI.

The type of *Procamelus elrodi* sp. nov., is figured and described as well as other cameloid material.

22. A Geological Reconnaissance in North Dakota, Montana, and Idaho, with notes on Mesozoic and Cenozoic Geology. *Annals Carn. Mus.*, V, 1909, pp. 211-288, Pls. XVI-XXI.



Photograph of Earl Douglass taken not long before his death.

